

Appl. No. 09/823,726
Amdt. Dated June 21, 2004
Reply to Office Action of March 26, 2004

REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-32 were pending in the application. Claim 1 is amended to clarify that the method uses curved segments to connect orthogonal segments that may or may not be overlapping in a manner that indicates connection between nodes with multiple connections. Claim 1 is also amended to clarify that overlapping is performed such that an overlapped portion is not visible, e.g., only one line segment is shown. Independent claims 21 and 26 are amended similarly to stress how overlapping portions are displayed in the displayed network topology. Independent claim 31 is amended to clarify that the method includes displaying a distinguishing segment in a first connection path that is configured to indicate connectivity between a displayed node and only one of two other nodes.

No new matter is added by the claim amendments with support found in the original claims, Figures 2-4, and the specification at page 4, line 31 to page 6, line 29. Claims 1-32 remain for consideration by the Examiner.

Objections to the Specification

In the March 26, 2004 Office Action, the Abstract was objected to based on its language and format. A new, replacement Abstract is provided that complies with the recommended language and format for an abstract.

Objections to the Drawings

In the Office Action, the drawings were objected to due to informalities and for the failure of the specification to discuss all numbered elements of Figure 4. Formal drawings are provided in the attached Replacement Sheets to address issues with shading and line thicknesses and the like. Also, the specification was amended to discuss each numbered element of Figure 4.

Rejections Under 35 U.S.C. § 103

Additionally, the Office Action rejected claims 1-13, 15-19, and 21-32 under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,154,212 ("Eick") in view of U.S. Pat. No. 6,072,490 ("Bates"). This rejection is traversed based on the following remarks and the amendments to the independent claims.

As discussed in Applicants' Background, it is a difficult task to provide a graphical image of a complex network. Prior display methods called for avoiding overlap of

Appl. No. 09/823,726
Amdt. Dated June 21, 2004
Reply to Office Action of March 26, 2004

connections between nodes in a display due to the ambiguity that overlapping may create, but this leads to very complicated webs of tangled connections that are difficult to interpret. The inventors discovered that overlapping leads to problems in part because when orthogonal line segments are connected with right angles connections a viewer cannot determine which nodes are paired or connected by a set of orthogonal line segments. To this end, the inventors decided to combine orthogonal line segments that overlap rather than a plurality of non-overlapping segments with connectors that distinguish connectivity between the nodes, such as by providing a sense of direction to a connection path. For example, see the curved segment 180 in Figure 2 which indicates connection between switch group 110 and switch group 120 (rather than with loop group 140 which would be indicated with a curve directed toward the group 140).

In this regard, claim 1 calls for a method comprising displaying first and second connection paths each representing one of the connections between a displayed node and one of two other nodes. The first connection path includes first and second orthogonal segments and a first curved segment joining the first and second segments so as "to indicate connection of the displayed node and a first one of the two other nodes. The second connection path includes first and second orthogonal segments and a second curved segment joining the first and second segments so as "to indicate connection of the displayed node and a second one of the two other nodes." In this manner, the curved segments are configured to effectively indicate to a viewer of the display which nodes are connectively paired. This is important because the display method further calls for the first connection path to overlap a portion of the second connection path "such that the overlapped portion...is not visible in the network topology display." A single line segment can in this manner be used to represent multiple connections with the curved segments between segments indicating connected nodes, e.g., indicating multiple connection paths. Eick and Bates fail to show each of these features of the method of claim 1, and hence, the rejection under these references is inappropriate and should be withdrawn.

Specifically, Eick fails to teach the claimed curved segment which indicates connection between two nodes in a display. The Office Action cites Eick at the abstract, col. 1, lines 46-60, col. 5, lines 40-53, and Figures 1 and 5 for teaching "curved segments joining nodes in a continuous manner." However, Eick does not teach orthogonal segments joined by a curved segment. As shown in Figure 5, Eick merely shows either single oblique lines or

Appl. No. 09/823,726
Amdt. Dated June 21, 2004
Reply to Office Action of March 26, 2004

single curved lines and at col. 1, lines 46-60, Eick teaches that segments, arcs, and three-dimensional curves may be used to join two nodes. Hence, Eick fails to teach the claimed joining of two orthogonal segments with a curved segment. More significantly, Eick fails to teach that the curved segments are configured to show connectivity between two nodes by their connection of two orthogonal segments. This feature is not discussed nor suggested by Eick, and this failure is likely because Eick fails to show overlapping of connection paths or links as called for in claim 1. For at least this reason, claim 1 is believed allowable over Eick.

Bates fails to overcome the deficiencies of Eick. Bates is cited at the abstract, col. 4, lines 17-37, and Figures 2 and 15 for showing overlapping connection paths. Applicants could see no overlapping of connection paths in Figure 2 and 15. It can be seen that connectors or links connect to each other, but it is not clear how this could be construed as teaching overlapping of two connection paths between nodes in a network topology. To further clarify the inventive method, claim 1 is amended to call for the overlapping to be achieved such that only one segment is visible in the display when overlapping occurs. This can be seen, for example, in Applicants' Figure 2 where line segment 122 is shown in the display but there are two orthogonal segments being represented as loop group 140 and switch group 110 both have connection paths to switch group 120. Bates does not teach that its elements such as element 82 is connected by multiple connections to other elements with overlapping being used to avoid showing each and every connection (e.g., appears each connector 84 is shown). Claim 1 is not shown or suggested by the combination of Eick and Bates, and claim 1 is in condition for allowance.

Claims 2-13 and 15-19 depend from claim 1 and allowable as depending from an allowable base claim.

Independent claims 21 and 26 include limitations similar to claim 1 and are believed allowable for the reasons provided for allowing claim 1. More particularly, claims 21 and 26 call for overlapping of portions of first and second connection paths such that only one of the overlapping portions is visible in the display. Neither Eick nor Bates teaches overlapping of connection paths such that only one of the connection paths is visible for the overlapped portion. Hence, claims 21 and 26, and claims 22-25 and 27-30 which depend from claims 21 and 26, are believed in condition for allowance.

Independent claim 31 is directed to a method that includes limitations similar to claim

Appl. No. 09/823,726
Amdt. Dated June 21, 2004
Reply to Office Action of March 26, 2004

1 and the arguments presented with regard to claim 1 are believed equally applicable to claim 31. Claim 31 calls for orthogonal segments of each connection path to be connected with distinguishing segments rather than curved segments. Further, the distinguishing segments are "configured to indicate connectivity between the displayed node and only one of the two other nodes by providing a sense of direction to the first connection path." Eick is cited for teaching the distinguishing segment. However, since Eick never teaches overlapping links there would be no reason for it to teach a distinguishing segment as Eick in Figure 2 and elsewhere merely shows each and every link. Further, claim 31 calls for the distinguishing segment to provide a "sense of direction" to the connection path, which allows a viewer of a display (such as the displays in Figures 2-4 of Applicants' specification) to readily determine which nodes are connectively linked even though multiple paths exist in the displayed topology. Bates fails to overcome this deficiency of Eick (and also fails to show the overlapping feature of the method of claim 31), and hence, claim 31 and claim 32 which depends from claim 31 are believed in condition for allowance over this combination of references.

Additionally, in the Office Action, claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Eick and Bates further in view of U.S. Pat. No. 6,331, 983 ("Haggerty"). Claim 14 depends from claim 1 and is allowable as depending from an allowable base claim. Further, Haggerty fails to overcome the deficiencies in Eick and Bates as noted with reference to claim 1, e.g., Haggerty fails to show the curved segments and the overlapping features of the method.

Further, in the Office Action, claim 20 was rejected under 35 U.S.C. 103(a) as being unpatentable over Eick and Bates further in view of U.S. Pat. No. 6,295,575 ("Blumenau"). Claim 20 depends from claim 1 and is believed allowable as depending from an allowable base claim. Further, Blumenau fails to overcome the deficiencies of Eick and Bates noted in reference to claim 1.

Appl. No. 09/823,726
Amdt. Dated June 21, 2004
Reply to Office Action of March 26, 2004

Conclusions


The additional references cited in the Office Action but not relied upon have been reviewed but are believed to be no more relevant than those relied upon. The pending claims are believed allowable over these references considered individually or in any combination.

No fee is believed due with this Amendment. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

Date 6/21/04



Kent Lembke, Reg. No. 44,866
Hogan & Hartson LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone: (720) 406-5378
Fax: (720) 406-5301

Attachments: Replacement Sheets